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Electronic document management systems implementation across industries: systematic analysis

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ABSTRACT

The construction sector's pivotal role in the global economy faces challenges due to its dynamic nature. Inaccurate documentation impacts project cost management, underscoring the need for effective document management systems (DMS), including electronic document management systems (EDMS). This study conducts a systematic literature review to comprehensively examine EDMS implementation, utilization, and effectiveness across sectors. Analyzing peer-reviewed articles and scholarly sources reveals key themes, trends, and findings, providing insights into successful EDMS adoption and best practices. The review contributes evidence-based insights for practitioners, researchers, and policymakers, addressing gaps in knowledge and advancing understanding of EDMS in modern information management. Additionally, it presents a detailed breakdown of publication distribution across sectors, highlighting significant research areas like companies and businesses, education, and information technology and software. Furthermore, analysis of factors influencing employee behavior, including technical factors, employee's personal characteristics, organizational factors, and trust, offers valuable insights into workplace dynamics. Overall, the study offers comprehensive insights into EDMS implementation, guiding future research, and organizational strategies.

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1. INTRODUCTION

Across all industries, managing documents is a very important part especially to meet the expectations of end users and avoid complicated problems in the future. The construction sector, recognized as one of the fastest-growing industries globally, plays an integral role in the dynamism and development of the global economy. Its significance in major developments across various countries [1]. However, the complexity of the construction industry, often rapidly changing and possessing unique characteristics [2], demands structural attention in its management [3].

Inaccurate documentation stands as a primary cause of project cost management failures, 90% of construction projects are affected by this issue [4]. Poor document management is a cause of cost issues in construction projects [5], [6]. Inadequate documentation also leads to an inability to meet project time, cost, and quality targets [7], resulting in significant delays and disputes impacting construction costs. Across industries, problems such as difficulty in locating documents not being centralized in one repository often arise. Another common issue is hardcopy documents, which have the risk of being damaged or lost over time. To address these challenges, it can be enhanced through the implementation of document management

systems (DMS). DMS functions as a tool for storing, controlling, and processing electronic or paper documents [8]. Electronic document management system (EDMS) implementation in commercial organizations is designed to automate processes and combine the processes that occur within the company in one system, from departmental work to field-oriented data analysis [9]. EDMS more effective document digitization solution than traditional document management systems (TDMS) which has limitations on storage capacities and document damage risks [10], [11]. Thus, the implementation of EDMS becomes crucial to meet organizational needs and efficiently address document management issues.

Implementation of EDMS has emerged as indispensable tools for organizing, storing, and retrieving documents in various domains, including businesses, government agencies, and academic institutions. To find out the extent to which EDMS is implemented across industries, a systematic literature review is required. Systematic literature review delves deeply into various related journals to construct a comprehensive understanding of the discussed topic. In previous research, systematic literature review (SLR) has been utilized to assess and identify relevant data, aiming to generate specific insights within the research domains under investigation such as explore the implementation of blockchain technology in the logistics industry [12], develop problem-based learning models effectively [13], nationalism education in elementary school [14]. SLR aims to explore trends, challenges, and application scenarios of healthcare services for the elderly [15], technological, pedagogical, and content knowledge (TPACK) [16], the six-sigma approach in education [17], blended learning in elementary school science learning [18], epistemological beliefs and teaching practice [19], and research on mathematical beliefs [20]. Furthermore, systematic literature review on university website quality [21], the role of technology in language immersion [22], showed significant contribution to rigorous and structured analyses across multiple domains [23].

By comprehensively reviewing the literature, we gained insights into best practices for implementation, factors that influence implementation success, and areas that require further investigation. Unfortunately, no systematic analysis of EDMS implementation has been conducted, it is necessary to conduct in-depth research and explore EDMS implementation trends across industries. The systematic analysis herein modifies SLR using the preferred reporting items for systematic review and meta-analyses (PRISMA) method and conducts weighting each selected article based on topic relevance. Therefore, detailed analytical steps in this study are essential to fill the existing knowledge novelty. Through a systematic analysis of EDMS implementation across industries, it provides a roadmap to explore the diverse EDMS research landscape, emphasizing the importance of EDMS and the need for a comprehensive understanding of EDMS across industries. By systematically searching and synthesizing relevant literature, this systematic analysis aims to explore key themes, trends, and findings related to EDMS implementation in various organizations, as well as the key factors that drive and challenge its adoption. Thus, the specific question of the study: What types of EDMS Implementation trending industry research sector? What EDMS Implementation main factor on previous research?

2. RESEARCH METHOD

The methodology utilized in this study adopts a SLR approach, utilizing data from leading international journals indexed in Scopus, spanning the publication period from 2019 to 2023. SLR systematically search, discover, and synthesize articles or literature relevant to previous research topics. This process entails the identification, evaluation, and interpretation of all relevant studies in the field of interest, aiming to address emerging questions arising from the research topic [24], [25]. In this section, SLR is conducted using the PRISMA. PRISMA gives a comprehensive checklist for surveying the quality and completeness of announcing in efficient audits and meta-analyses [26]. PRISMA is broadly recognized and supported by driving diaries and other organizations as an instrument to improve the quality of precise audits and meta-analysis reports [27]. This study focuses on EDMS implementation in the context of research trends over the above-mentioned time span in different sectors and reviews some key factors from some selected papers, compared to the situation in coastal communities. There are five research stages: literature review planning, database selection, determining inclusion and exclusion criteria, articles selected, and weighting of selected articles. The process of literature review is well-organized and transparent, through structured procedures at each stage, starting from identification to interpretation of all relevant studies [28], [29].

2.1. Literature review planning

In literature review planning stage, researchers begin by exploring Scopus-indexed international journals, narrowing down domains based on the research's chosen theme. The objective is to gather relevant and high-quality sources pertaining to the research topic. It commences with identifying pertinent literature sources aligned with predetermined criteria. Subsequently, the identified literature undergoes thorough evaluation to assess its quality and relevance. The literature review planning is conducted meticulously and transparently, ensuring each step adheres to a robust methodology.

2.2. Database selection

At the database selection stage, researchers utilized the Scopus database through the official Scopus portal to access related literature and make comparisons. The Scopus database was chosen because it is wide-ranging, credible, and provides access to a collection of important information [30], [31]. The selected search keywords, "information management, electronic document management system, transformation, and industry," initially yield a comprehensive set of 10,928 research studies worldwide. The filtration process unfolds in stages. Initially, employing specific source codes, the pool of documents is refined to 6,475 during the initial filtration phase. Subsequently, a more granular approach is adopted in the second phase of filtration, resulting in the selection of 1,866 articles. Further refinement is pursued in the subsequent filtration phase to achieve a more nuanced selection. Through the application of additional filters, 416 documents emerge as pertinent to the research objectives. The fourth phase introduces heightened rigor, incorporating stringent inclusion and exclusion criteria to yield a refined selection of 130 documents. Table 1 shows detail the database selection phase.

Table 1. The database selection phase

Phase	Pseudocode research	Result
Phase 1	information AND management, AND electronic AND document AND management AND system, AND transformation, AND industry AND PUBYEAR>2018 AND PUBYEAR<2024	6,475 docs
Phase 2	information AND management, AND electronic AND document AND management AND system, AND transformation, AND industry AND PUBYEAR>2018 AND PUBYEAR<2024 AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "SOCI"))	1,866 docs
Phase 3	information AND management, AND electronic AND document AND management AND system, AND transformation, AND industry AND PUBYEAR>2018 AND PUBYEAR<2024 AND (LIMIT-TO (EXACTKEYWORD, "Digital Transformation") OR LIMIT-TO (EXACTKEYWORD, "Information Management") OR LIMIT-TO (EXACTKEYWORD, "Digital Technologies") OR LIMIT-TO (EXACTKEYWORD, "Project Management")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English"))	416 docs
Phase 4	information AND management, AND electronic AND document AND management AND system, AND transformation, AND industry AND PUBYEAR>2018 AND PUBYEAR<2024 AND (LIMIT-TO (EXACTKEYWORD, "Digital Transformation" "Digital Technologies") OR LIMIT-TO (EXACTKEYWORD, "Project Management")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SUBJAREA, "COMP")) AND (LIMIT-TO (OA, "all"))	130 docs

Article findings in the database selection are filtered according to topic relevance. Article filtering is customized by title, abstract, and keywords. These chosen articles will undergo rigorous validation and scrutiny [20]. The same theme was discarded, the selected articles were saved in the research information system (RIS) format, then entered the VOSviewer to map the initial network of topic relevance. VOSviewer was used to perform bibliometric approaches and RIS data extract visualization. Figure 1 shows that types of EDMS implementation trending industry research sector and EDMS implementation main factor on previous research have a very complex association pattern. Analysis of 1,866 documents retrieved in the database selection phase 2 shown in Figure 1(a). The visualization RIS data extract phase 3 in Figure 1(b) showcases a more specific network from the filtering outcome in Figure 1. Furthermore, in Figure 1(c) it interprets that the visualization network is more specific compared to Figure 1(b) due to the outcome of 130 documents found. Network visualizations (b) and (c) in Figures 1 illustrate the relationships and thematic patterns among keywords, authors, journals, and other entities in the literature corpus.

2.3. Inclusion and exclusion criteria

Researchers determine the inclusion and exclusion criteria based on quality. The query specifies a publication year range from 2019 to 2023, targeting recent research within the specified timeframe. The inclusion of language restrictions to English-language publications enhances accessibility and comprehension for a wider audience, facilitating knowledge dissemination and cross-disciplinary collaboration. Overall, the provided source code facilitates a focused exploration of scholarly literature, enabling researchers to access timely and relevant information on the intersection of information management, electronic document systems, transformation, and industry dynamics. This meticulous approach underscores the importance of staying abreast of contemporary research trends and developments. In essence, the provided source code serves as a valuable tool for researchers seeking to explore and analyze scholarly literature in pursuit of deeper insights and knowledge in their respective domains.

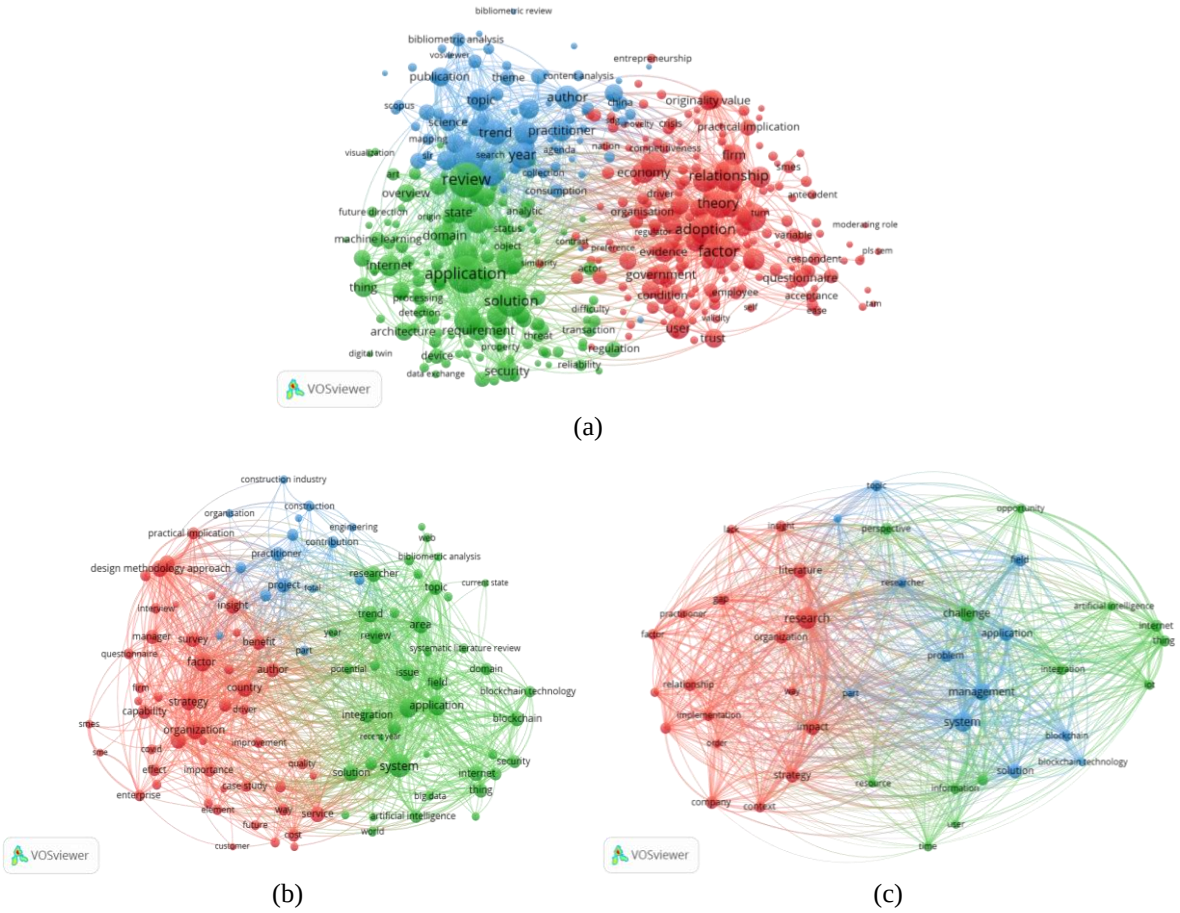

Figure 1. Visualization of RIS data extract: (a) phase 2, (b) phase 3, and (c) phase 4

2.4. Articles selected

Through a systematic literature review process, researchers have carefully curated 30 selected journals sourced from Scopus that represent a diverse range of scholarly work related to EDMS implementation in previous research. By scrutinizing various articles and publications, the authors have distilled a comprehensive set of journals that promise to offer valuable insights into EDMS trends in various sectors and a review of key factors. Table 2 shows selected articles in the trending industry research sector review. From this table these studies broadly raise issues related to the application of blockchain, the impact of Industry 4.0, and digital transformation in key sectors such as education, health, construction, and information technology. The phenomenon of digital transformation is in the spotlight, with research aiming to understand trends, innovations, and their impact in the context of economics, business structure and environmental sustainability. Apart from that, research also highlights the importance of data and information management and digital literacy in supporting sustainable decision-making processes in the digital era.

2.5. Weighting of selected articles

After 30 articles selected journals, researchers weighted each selected article based on topic relevance. Weighted of selected articles in the EDMS implementation main factor shown in Table 3. Table 3 presents research findings on the main factors associated with digital transformation across various sectors. From the data provided, these factors include employee's personal characteristics, technical factors, organizational factors, and trust. These studies provide insights into the importance of these factors in driving digital transformation across different fields, ranging from education, manufacturing, construction, to the energy and health sectors. It appears that employee's personal characteristics and technical factors are the primary focus in most studies, indicating that human resources and technical capabilities play a central role in driving digital transformation. Additionally, the role of organizations in promoting and managing digital transformation is also a significant highlight, with trust being a key element in building a strong foundation for digital technology adoption.

Table 2. Selected articles in the trending industry research sector review

No.	Title of articles
1	"Developing a blockchain based digitally secured model for the educational sector in Saudi Arabia toward digital transformation" [32]
2	"The impact of Industry 4.0 on the reconciliation of dynamic capabilities: evidence from the European manufacturing industries" [33]
3	"Chief information officer's role for IoT based digital transformation in Colombian SMEs: Rol del Director de Informacion para la Transformacion Digital basada en IoT en las PYMES colombianas" [34]
4	"Knowledge mapping analysis of intelligent ports: research facing global value chain challenges" [35]
5	"Discovering themes and trends in digital transformation and innovation research" [36]
6	"Impact of digital transformation on the energy sector: a review" [37]
7	"Digital transformation in construction - a review" [38]
8	"Tracing the evolution of digitalization research in business and management fields: Bibliometric analysis, topic modelling and deep learning trend forecasting" [39]
9	"Digital transformation as an interaction driven perspective between business, society, & technology" [40]
10	"Communication technologies for smart grid: a comprehensive survey" [41]
11	"Process view to innovate management of the social housing system: a multiple case sttudy" [42]
12	"Innovative maritime operations management using blockchain technology and standardization" [43]
13	"CrowdMed II: a blockchain based framework for efficient consent management in health data sharing" [44]
14	"Indicators for organizational digital transformation in Thai University context" [45]
15	"A framework for assessing manufacturing SMEs industry 4.0 maturity" [46]
16	"A conceptual model for developing digital maturity in hospitality micro & small enterprises" [47]
17	"Disruptions leading to digital business transformation: executives perceptions" [48]
18	"Key strategies for digital transformation - a non-medical center hospital in Taiwan as an example" [49]
19	"Climate change and COP26: are digital technologies and information management part of the problem or the solution? An editorial reflection & call to action" [50]
20	"Building information modelling execution plans: a global review" [51]
21	"Application of data elements in the coupling of finance & technology on the digital electronic platform" [52]
22	"Topic mining & future trend exploration in digital economy research" [53]
23	"From private digital platforms to public data spaces: implications for the digital transformation" [54]
24	"Blockchain in education: a systematic review & practical case studies" [55]
25	"The effect of digital literacy on technology acceptance: an evaluation on administrative staff in higher education" [56]
26	"The trends & roles of robotic process automation technology in digital transformation: a literature review" [57]
27	"How can firms effectively use technology in customer journey management" [58]
28	"To align technological advancement and ethical conduct: An analysis of the relationship between digital technologies & sustainable decision-making processes" [59]
29	"Effects of digital transformation on dynamic capital structure adjustment: evidence from China" [60]
30	"Digital transformation among SMEs: does gender matter?" [61]

Table 3. Weighted of selected articles in the EDMS implementation main factor

Articles no.	Employee's personal characteristics	Technical factors	Organizational factors	Trust
1	8.00	9.00	7.00	9.00
2	7.00	8.00	8.00	7.00
3	8.00	9.00	8.00	8.00
4	8.00	9.00	7.00	7.00
5	9.00	9.00	7.00	7.00
6	8.00	9.00	8.00	8.00
7	7.00	8.00	8.00	7.00
8	8.00	9.00	8.00	8.00
9	9.00	8.00	7.00	8.00
10	7.00	9.00	8.00	8.00
11	8.00	7.00	8.00	8.00
12	8.00	9.00	7.00	8.00
13	8.00	9.00	8.00	9.00
14	7.00	8.00	8.00	7.00
15	8.00	9.00	8.00	8.00
16	8.00	7.00	8.00	8.00
17	8.00	7.00	8.00	8.00
18	8.00	8.00	9.00	8.00
19	8.00	7.00	8.00	8.00
20	8.00	9.00	8.00	8.00
21	7.00	8.00	7.00	8.00
22	8.00	9.00	7.00	8.00
23	8.00	8.00	7.00	8.00
24	8.00	9.00	8.00	9.00
25	7.00	8.00	8.00	7.00
26	8.00	9.00	8.00	8.00
27	7.00	8.00	8.00	7.00
28	8.00	7.00	8.00	8.00
29	8.00	8.00	7.00	8.00
30	7.00	7.00	7.00	7.00

3. RESULTS AND DISCUSSION

This study explores the types of EDMS implementation trending industry research sector and EDMS implementation main factor on previous research used systematic analysis. While various approaches to SLR are recommended, such as traditional SLR, rapid evidence assessment (REA), meta-analysis, scoping review, realist review, and umbrella review [62], [63]. Unfortunately, as no regular examination of EDMS usage has been carried out, it is essential to carry out in-depth investigations and investigate EDMS usage patterns across industries. EDMS enables the digitization of documents to meet company needs [64]. Involvement EDMS implementation in various sectors that shown in Table 4 emphasize the complexity and relevance of digital transformation in various aspects of life and industry. Each row represents a distinct sector, encompassing finance and banking, health and healthcare, government and public sector, education, manufacturing, companies and businesses, construction and infrastructure, information technology and software, environment and energy, as well as trading and distribution. The compilation of selected journals will entail a comprehensive cataloging of each of the 30 chosen journals, meticulously categorized based on predetermined variables. The numbers in the article number column of Table 4 show selected articles according to Table 2 which have been categorized in each sector, while the percentages in Figure 2 describe the proportion of EDMS implementation in each sector.

Table 4. Categories EDMS Implementation in various sectors

Category	Articles no.
Finance and banking	21, 29
Health and healthcare	13, 18
Government and public sector	11
Education	1, 14, 24, 25
Manufacturing	2, 15
Companies and businesses	3, 8, 9, 16, 17, 27, 28, 30
Construction and infrastructure	7, 20
Information technology and software	5, 22, 23, 26
Environment and energy	6, 10, 19
Trading and distribution	4, 12

We found that EDMS implementation trending industry research sector and EDMS implementation main factor on previous research correlates with the compilation of selected journals. The proposed method in this study tended to have an inordinately higher proportion of EDMS as systematic analysis. Our research suggests SLR doesn't yet provide comprehensive information regarding the implementation of EDMS with weights such as the method applied. The proposed systematic analysis method by added weighting to selected articles is not only useful for visualization and quantitative weighting without having a negative impact on the previous SLR. This study explored a comprehensive literature about EDMS in various sectors with a scientifically selected article. However, in-depth studies may be needed to validate its data RIS especially regarding EDMS implementation trending industry research sector and EDMS implementation main factor.

Figure 2 provides a detailed breakdown of EDMS implementation trending industry distribution across various sectors or industries. According to the provided data, companies and businesses exhibit the highest number of publications at 27%, followed by education and information technology and software, both contributing 13% to the total publications. Finance and banking, health and healthcare, manufacturing, and construction and infrastructure each account for 7% of the publications, while government and public sector and environment and energy contribute 3% and 10% respectively. The trading and distribution sector contributes 7% to the total publications. Overall, this distribution highlights the diverse research focuses EDMS implementation in across industries, with notable emphasis on companies and businesses, education, and information technology and software. Such distribution underscores the varied interests and priorities within academic literature, reflecting the multifaceted nature of research topics and trends across industries. This shows the importance of continuously monitoring and analyzing research trends in digital transformation to anticipate changes and pursue new opportunities in facing future challenges.

Our study demonstrates that systematic analysis by added weighting in each selected article referring to topic relevance is more resilient than SLR. Future studies may integrate additional variables of information regarding the implementation of EDMS across industries in a feasible way to produce comprehensive and informative results. Figure 3 presents data on four different factors influencing employee behavior or performance, namely employee's personal characteristics, technical factors, organizational factors, and trust. Additionally, a percentage in Figure 3 is shown indicating the proportion of incidents relative to the total number. Based on the data presented, technical factors exhibit the highest count at 248 occurrences, representing 26% of the total observations. Employee's personal characteristics and trust closely

follow with 234 and 235 occurrences respectively, each accounting for 25% of the total. Organizational factors account for 231 occurrences, constituting 24% of the total count. Recent observations suggest that systematic analysis method with weighting on each selected article based on relevance topic enhances understanding of EDMS implementation across diverse industrial sectors. Our findings provide conclusive evidence that SLR is due to provide visualizations, but systematic analysis establishes a comprehensive and informative overview of the current body of knowledge concerning EDMS implementation across industries.

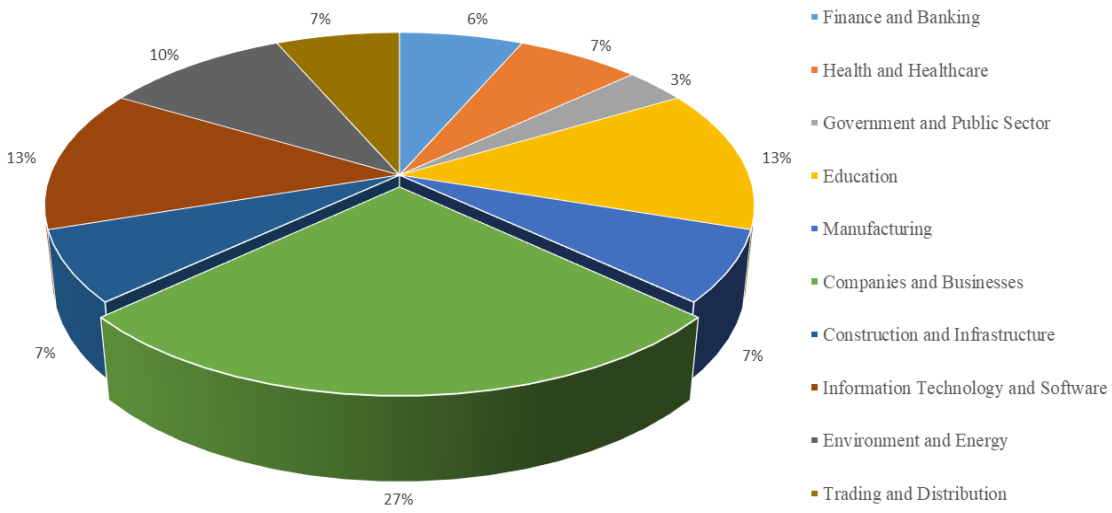

Figure 2. Results of EDMS implementation trending industry research sector

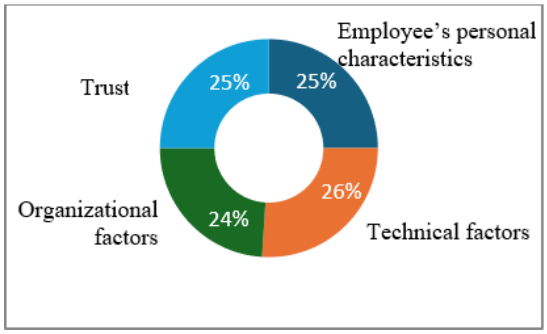

Figure 3. EDMS implementation main factor

4. CONCLUSION

The findings in the current literature inform that systematic analysis method with weighting on each selected article based on relevance topic enhances understanding of EDMS implementation across diverse industrial sectors. EDMS implementation trending industry research sector in companies and businesses lead in publications (27%), both education sector, and information technology and software sector following closely (13% each), the remaining less than 13%. Main factor of EDMS implementation on previous research shed light on employee behavior and performance dynamics. Systematic analysis provides a comprehensive overview of the current body of knowledge concerning EDMS implementation across industries. Research on EDMS across industries by systematic analysis positively impacts implementation strategies in modern generations. Future studies should delve deeper into diverse variables for improved insights knowledge of EDMS.

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